QL_SERIAL 1 TO............PARALLEL CONVERTER

BY REX LUNDGREN

Protection diodes at pins 5 & 6 of 74HC02 help supply power to the circuit, limited to a safe voltage by a 5.1 Volt zener diode. Pins 5 & 6 are the serial input to the circuit. The nor gate reinverts the logic levels with pins 5, 6, and 4. Pin 4 is normally high. When it receives the start bit, it goes low, triggering the frame byte timer (pin 6 of IC-TLC556), and sending bit data to pin 2 of the serial-to-parallel shift register (chip 74HC164).

The timing of the frame byte timer consists of RA and C1. The timer's output (pin 5) goes high for 930 micro seconds, and because it is tied to the clock's reset (pin 10), it allows the clock to pulse 9 times before being reset after the frame byte time period. The clock rate consists of R1, RB and C2. The timer's output also goes to pin 3 of 74HC02's nor gate. This tells the computer not to send another byte immediately. The last connection to the timer is C3. C3 with R2 and R3 shape the pulse. The timer's falling edge is turned into a proper trigger pulse for TLC555, which outputs a square wave pulse and gets inverted by nor gate 74HC02 for the printer to strobe in parallel data.

Now let's go back to the clock. The clock frequency is 9600 Hz, same as the baud rate. The clock's output (pin 9) of TLC556 starts from a low, giving a positive going edge at the beginning of each serial bit, which is not desirable. So by inverting the clock with a nor gate from 74HC02 chip, we get a positive going edge in the middle of each serial bit. Now we have all the right timing needed for the 74HC164 serial-to-parallel shift register chip.

NOTES:

(1) First adjust RB for 9600 Hz.
Without the RXD (pin 3) on serial 1 connected, run a jump wire from +5 volts to junction D1, D2. Connect a frequency meter to pin 9 of IC-2. Adjust RB for 9600 Hz. Do NOT change this once it's adjusted. Disconnect jumper, connect RXD.
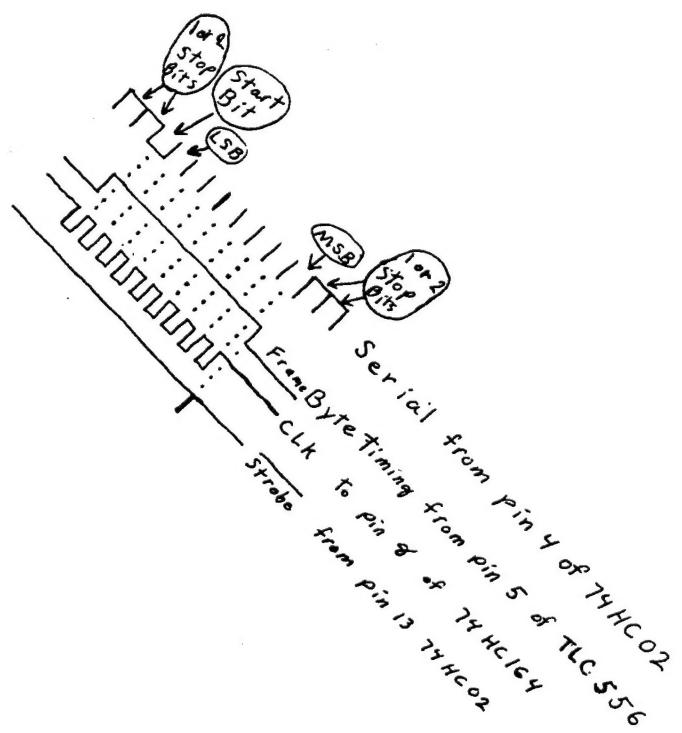
(2) Adjust RA for frame byte timing.
With circuit connected to the QL and the printer, set RA to its mid adjustment. Send about 6 lines of text to the printer using a word processor or a basic program loop. As the printer is printing, adjust RA for correct characters. Depending on your printers buffer size, the amount of delay between adjusting RA and seeing the results will vary, so it may be advisable to adjust RA between printings. If you find that there is a range of adjustments that work, set RA at mid point of that range.

(3) Because the parts are Cmos, it's possible to run the curcuit from all of the serial lines by use of diodes at each line, like "D1, D2" and "D3, D4" are hooked up. You need to use the CTS, DTR, and/or DSR, RTS. So it appears that it needs no power line. This will work on other serial ports of other computers as well.

SEE DIAGRAM BELOW AND ON NEXT PAGE>>>>>>>>>>>>>>>>

1	74 HC 02
1	74 HC 164
1	TLC 556
1	TLC 555
4	1N914 or 1N4148

```
TT  | TIMEXsinclair
II  |  user group
MM  |  News-Magazine
EE  |
LL  | -T/S-PUG
II  | -T/S-SVU
NN  | -S/T-EBZUG
EE  | -TCWT/S_SIG
ZZ  | -TAS-BAM,Inc.
```

FRONT PAGE

PRINTED USING
Sinclair QL
PROFESSIONAL
COMPUTER AND
THIS PROGRAM.

```
DESK-TOP PUBLISHING
FOR THE SINCLAIR QL
===================
```

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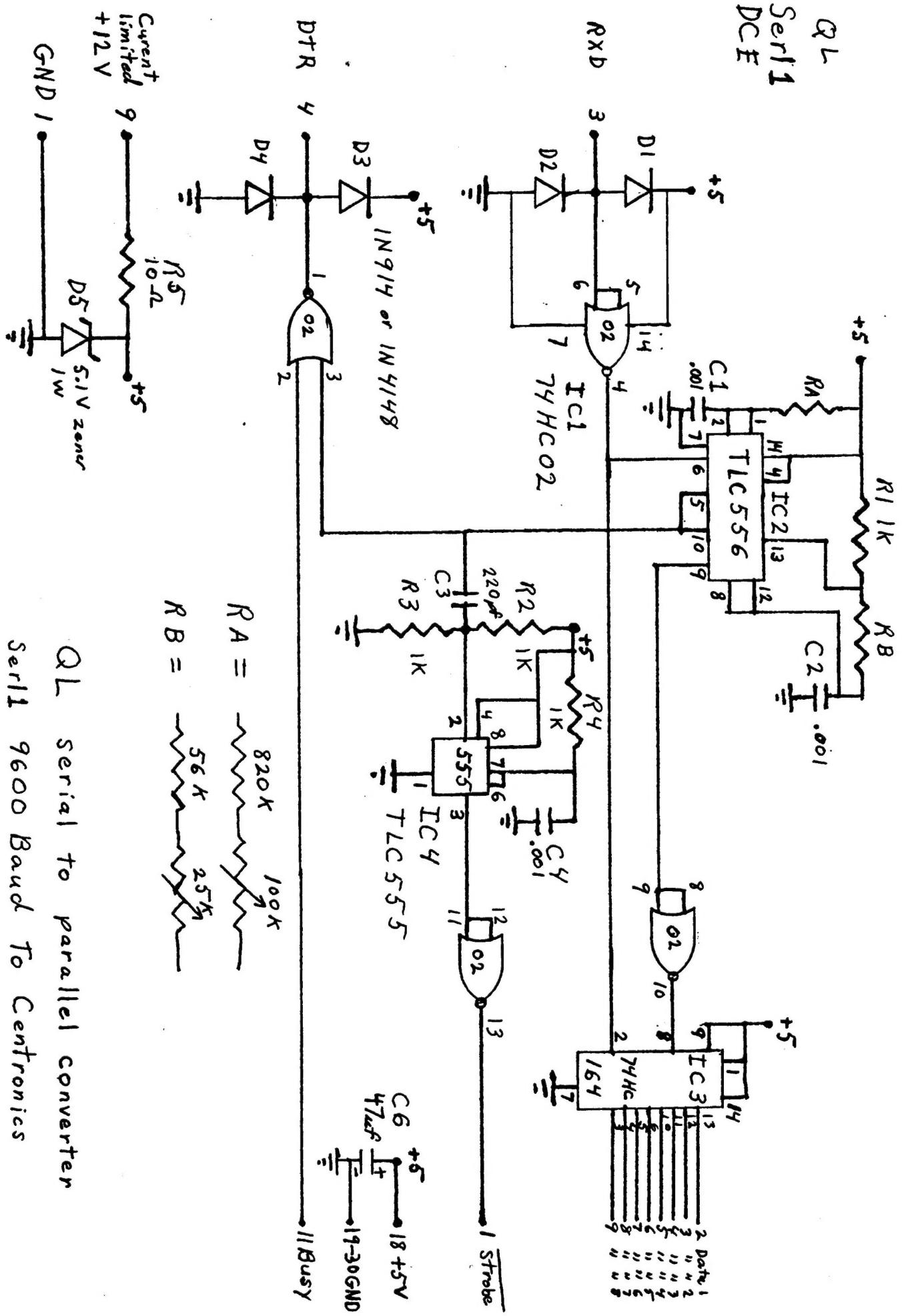Pacifica, CA 94044
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The PDSE Library is now available to all; covering T/S1000-1500, T/S 2068, Spectrum and the QL.
Contact **American Micro** for further details.

QL
Serl1
DCE

RxD 3

DTR 4

GND 1

Current limited +12V 9

D1 D2 D3 D4 D5

IN914 or IN4148

R5 10Ω

5.1V zener 1w

+5

IC1 74HCO2

IC2 TLC556

R1 1K

RA

RB

C1 .001

C2 .001

R2 1K

R3 1K

C3 220µf

R4 1K

IC4 TLC555

555

C4 .001

+5

IC3 74HC 164

C6 47µf

1 Strobe

11 Busy

18 +5V

19-30 GND

+6

Data 1

RA = 820K
RB = 56K 100K 25K

QL serial to parallel converter
Serl1 9600 Baud To Centronics

RLL

1989 Feb 03 12:36:59
flpl sn892 lis
Sf890203.1223;; Words_1395;;
SincLink;; Newsletter;;
filename: Sn892 (Sn8901);;

Page_1:..
Volume 8;; Number_2..
Feb_1989...

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For commercial use, contact
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--- 6675 Clifford Drive..
--- Cupertino;; CA_95014-4530..

Sn892_table of contents::..
page. description (filename,
length)..
1. SincLink newsletter February,
1989 (Sn892 lis,
Bytes_12077?)..
Disclaimer..
What is SincLink?..
What are the advantages of
'Subscribing' to SincLink?..
How do I 'Subscribe' to
SincLink?..
SLIX newsletter exchange for
January 1989 (1 month)
(Sx89t8p0 lis, Bytes_?????)..
SincLink 1988 tables of
contents(5) (Sn88_lis,
Words_514)..
2. QL_logo documentation by: Tim
Swenson (ss89202c_lis,
Bytes_4560?)..
QL_logo program listing by: Tim
Swenson (ss89202d_bas,
Bytes_1792)..
3. SLIX contacts and newsletter
exchanges, January 1989 (46)
(Sc8901_lis, Bytes_50123)..
7. SincLink table of contents
for January, 1989..
8. CORE_WAR QL_game
documentation by: Tim Swenson
(Ss89202a, Bytes_5775?)..
CORE_WAR QL_game listing by: Tim
Swenson (Ss89202b_bas,
Bytes_5388?)..
9. TS2068_GAME AD from:..
Oscar Eugenio Macia..
Billinghurst 1565 piso 2 dpto
G..
(1425) Capital Federal, Bs. As..
ARGENTINA...
10. QL SERIAL TO PARALLEL
CONVERTER documentation by: Rex
Lundgren..
11. QL SERIAL TO PARALLEL
schematic by: Rex Lundgren..
12. SincLink Information
8902::..
LOOKING FOR TIMEX SINCLAIR
SHAREWARE SOFTWARE? (BBS's)..
TS PRODUCTS FOR SALE?..
LISTING TS USER GROUPS?..
NEWSLETTER EXCHANGE?..
Back issues of TIMELINEZ/
SincLink are available..
SincLink Subscription List...

Disclaimer: SincLink and
Authors disclaim responsibility
for the results of hardware
modifications to your computer
system..
If you are not SURE of your
capabilities, get someone with
more experience to help you...

What is SincLink?..
SincLink is the name of the
original publication of the
Group Using Timex Sinclair of
Silicon Valley (GUTS/SV)..
SincLink was first published in
April, 1982..
Parts of SincLink are usually
printed in TIMELINEZ, the
publication of Timex Sinclair
East Bay Z80 User Group
(TSEB2UG), Timex Sinclair
Peninsula User Group (TSPUG)
and GUTS/SV...

------------------------------..
What are the advantages of
'subscribing' to SincLink?..
The purpose of most user groups
is to share information..
The best way to do this is thru
a newsletter, since most
members cannot attend every
meeting..
If you have a problem (or a
solution), the best way to ask
for help (or give help) is thru
the newsletter..
The newsletter also usually
contains information about
other User Groups around the
nation and world that we gather
thru our newsletter
exchanges...

------------------------------..
How do I 'subscribe' to
SincLink??..
For User Groups (even small
ones- there is nothing wrong
with a one person User Group
that puts out it's newsletter
on a TS2040), we would prefer
to exchange newsletters on disk
(or paper if disk is not
available)..
If you just can't exchange
newsletters, the best way to
'Subscribe' to SincLink is thru
SLIX (SincLink Information
eXchange)..
Send us some Sinclair related
information and we will send
you a current SincLink and a
'SLIX Contacts' printout with
your information in it so that
you can check it for accuracy
and suitability..
Mail exchange newsletters or
information (on disk or paper)
to:..
SLIX..
c/o Bill Miller, 408-253-3175..
--- 6675 Clifford Drive..
--- Cupertino, CA 95014-4530..
You may also call your
information in to the telephone
number listed above..
The information will become part
of the Permanent SLIX Database
which will be made available to
all SLIX participants in as
many disk formats as we can
manage..
The preferred method for
exchanging information is as
ASCII text on 3.5in or 5.25in
floppy diskette using:;
MFM (Modified Frequency
Modulation- double density)..
80 or 40 cylinders..
(2) tracks (heads) per
cylinder..
(9), (10), or (11?) 512 BYTE
sectors per track..
The preferred disk formats (in
descending order of preference)

are::
QL 5.25in, 720K..
QL 3.5in, 720K..
TS2068 LarKen, JLO, or
AERCO?; 5.25in or 3.5in;
159blocks (cylinders,
tracks?)..
TS1000? LarKen, JLO, or
AERCO; 5.25in or 3.5in;
159blocks (cylinders, tracks)..
MS(PC)-DOS 3.5in, 720K
(Preferred Standard, 3.5in)..
MS(PC)-DOS 5.25in, 360K
(Preferred Standard, 5.25in)..
QL Cartridge or other QL Disk
Formats (Single Sided, 3in,
etc.)..
Other TS formats (Stringy
Floppy, WafaDrive, Cassette
tape)..
MS(PC)-DOS 3.5in, 1.44MB..
MS(PC)-DOS 5.25, 1.2MB..
C64/128 3.5in, 808K..
C64/128 5.25in, 340K..
Amiga 3.5in, 880K..
Macintosh 3.5in, 400K..
Macintosh 3.5in, 800K..
'NeXT' 256MB Optical Disk...

If you don't have a system that
can read and write any of these
formats, parts of SincLink are
available in TIMELINEZ..
TIMELINEZ subscriptions are
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San Jose, CA 95121...

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of SincLink in printed form and
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TIMELINEZ, subscriptions to
SincLink are $10.00 per year..
If you do not subscribe to
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------------------------------..
SLIX Newsletter Exchange 1989 to
1988 (13 Months), 8810?
Addresses::...

Directory name(PaperNo,
FilesNo)::..

Record_Name (File_size)
Newsletter Name..
-------- (-----) ---------..
Sx8901(P10,F4+ Sn891(4))::..
Sx890131_An892_4 HATS NL..
Sx890130_Mn891_10 SMUG BYTES..
Sx890120_Cn891_6 CRAGIST..
Sx890117_Zn891_20 ZX-Appeal..
Sx890117_Kn891_4 KATS KOMPUTER
KNEWS..
Sx890115_Tn88c_14 TIMELINEZ..
Sx890114_Pn891_8 PACC TALK..
Sx890110_Bn88n7_8 TS Bulletin..
Sx890109_Bn88n8_8 TS Bulletin..
Sx890105_Sn891_8 SincLink..
Sx890105_Hn891_(9540) HACKER..
Sx890105_HnB8c_(16450) HACKER..
Sx890105_Hn88b_(6583?) HACKER..
Sx890105_Hn88a_(129994?) HACKER..
..
------------------------------..

1989 Feb 02 09:14:38
flpl sn88 lis
Sf890202.0859;; Words_533;;
SincLink;; Newsletter Index;;
filename: Sn88 (Sfc88)
(Pages_1);;

SincLink Tables of Contents 1988
(5)::...

Newsletter Issue::..
Page. Description (Filename_ext,
Bytes or Words_size)...

SincLink 8812, 4pages::..
1. SincLink Newsletter 8812
(Sn8812 lis, Bytes_9493?)..
SincLink Copyright Notice..
Disclaimer..
What is SincLink?..
What are the advantages of
'subscribing' to SincLink?..
How do I 'Subscribe' to
SincLink?..
8811 SLIX Contacts (32)
(Sc8811 lis, Bytes_25920)..
3. SLIX Newsletter Exchange 88
(12) Months), 8810? Addresses
(Sx88 lis, Bytes_17330)..
4. SincLink Information 8812::..'
LOOKING FOR TIMEX SINCLAIR
SHAREWARE SOFTWARE?..
TS PRODUCTS FOR SALE?..
LISTING USER GROUPS?..
NEWSLETTER EXCHANGE?..
Back Issues of TIMELINEZ/
SincLink are available..
SincLink RENEWALS DUE...

SincLink 8810-11, 8pages::..
1. SincLink Newsletter 8810-11
(Sn88atb_doc, Bytes_10625?)..
SincLink Financial Report..
SLIX Progress::..
Newsletter Exchange Labels..
Disk (Media) Exchange..
2. 8810 SLIX Contacts (34)
(Sc8810 doc, Bytes_31063)..
4. 8809 SLIX Contacts (33)
(Sc8809 doc, Bytes_31097)..
7. SLIX Newsletter Exchange 88
(10? Months), 8810 Addresses
(Sx88_doc, Bytes_18044)..
8. SincLink Information 88
(Si88_doc, Bytes_6544)...

SincLink 8807-9, 16pages::..
1. Subscription Dues Due!!..
User Group Meeting Places and
Times..
2. HOW TO MAKE YOUR TIMEX
SINCLAIR COMPUTER COMPATIBLE
WITH:: AMIGA, APPLE II, ATARI,
COMMODORE, CP/M, IBM,
MACINTOSH, & MORE
(Ss88915a lis, Words_557)..
3. TS2068 Joystick Quad Drwg.
Pgm. by: Mark Wahl
(Ts88720a_lis, Words_251)..
QL Draw Routine by Bob Schubel
(Qlpic_bas, Bytes_3499?)..
4. QL Modapter; How it Works by:
Harvey Taylor from: ZX_Appeal
8804..
6. QL to PC Clone Cable and Test
Program by: Mark Wahl & Terry
Greenlee (Ts88726a_lis?,
Words_183). Terry reports this
file has an ERROR!! in the
wiring diagram!! Don't use it!!
Get an update!!..
7. Single Board Nuclear Reactor
supplies stand-by power for 12
years! (Nuclearpc_txt,
Bytes_3712)..

S#B90203.110B;; Words_588;; SLIX;; Shareware file;;
Filename_ss89202c (q1logo) (1page)..
--..
QL LOGO documentation by: Tim Swenson...

Some time back I wrote an article talking about the lack of
anyone using the turtle commands built into SuperBasic. I also
suggested that someone knowing Logo could write some basic
procedures to implement a variation of Logo on the QL. It
looks like everybody has waited for me to take up my own
challenge. After leaving my local library with a Logo book in
my had I set to work on the project...
..
Due to limitations of the turtle and graphics commands in
SuperBasic not all of the Logo commands could be easily
implemented. Below is a list of commands that are
implemented..
..
FD X------- Forward. Moves the turtle foward X units..
BK X------- Back. Moves the turle back X units..
RT X------- Right. Turns the turtle right X degrees..
LT X------- Left. Turns the turtle left X degrees..
CS--------- Clearscreen. Clears the screen and returns the
   turtle to the center of the screen..
PU--------- Penup. Stops the turtle from drawing when it
   moves..
PD--------- Pendown. Makes the turtle draw when it moves..
SETPC X---- Set Pen Color. Sets the pen color..
SETBG X---- Set BackGround. Sets the paper color..
HOME------- Returns the turtle to the center of the screen..
CIRCLEL X-- Draw a circle from the left with center at the
   current turtle position with radius X..
CIRCLER X-- Draw a circle from the right with center at the
   current turtle position with radius X..
CLEAN------ Clear the screen with out moving the turtle..
SETPOS X,Y- Draws a line from the current turtle position to the
   coordinates X, Y..
DOT X,Y---- Plots a point at X,Y and moves the turtle to this
   position..
SETX X----- Draws a line from the current turtle position to a
   point offset X units in the X coordinate..
SETY X----- Draws a line from the current turtle position to a
   point offset X units in the Y coordinate..
SETH X----- Set Heading. Makes the turtle face a certain
   heading. The top of the screen is 0 degrees. The left is 90
   degrees, etc..
INIT------- Initialise. This commands sets up the screen and
   the enviromental variables. Must be run at least once at each
   session, or after each CLEAR..
..
The commands are entered like SuperBasic commands. Do not put
() around the arguements. Commands with two arguements have a
, between the arguements (i.e SETPOS 10,10). See the sample
program listed below as an example..
..
All loop control is done using SuperBasic commands. The same is
done with logical control.. The Logo commands are those that
are graphics orientated..
..
To use the procedures, load the procedures into basic. Enter
your program on top of the procedures. The procedures start at
9000 so you can use low line numbers. Once you have entered
you program, save only that portion using a variation of the
save command that allows you to save only the lines you want.
To run your program again, load the procedures and then merge
in your program..
..
Sample Program: ARROW;;..
..
INIT..
CS..
FD 50..
LT 90..
RT 135..
FD 40..
RT 90..
FD 40..
RT 135..
FD 20..
LT 90..
FD 50..
RT 90..
FD 15..
..
I used the Apple Logo Primer by Gary Bitter as my reference
manual on Logo. It has some good example programs in it. I do
not know if other versions of Logo are compatible. Think they

should be...

Sr890202.1343 Ss89202c_END....

1989 Feb 02 14:50:50
raml_sys_bt2_tap
9000 REMark Q1logo_890202.1432
     by Tim Swenson..
9010 DEFine PROCedure svc
9020   DELETE flp1_ss89202d_bas
9030   SAVE flp1_ss89202d_bas
9040 END DEFine
9050 DEFine PROCedure init
9060 OPEN #3,con_512x203a0x0_10
9070 SCALE #3,100,0,0
9080 xcenter=75: ycenter=50
9090 PENDOWN #3
9100 END DEFine init
9110 DEFine PROCedure FD(arg)
9120   MOVE #3,arg
9130 END DEFine FD
9140 DEFine PROCedure BK(arg)
9150   MOVE #3,-arg
9160 END DEFine BK
9170 DEFine PROCedure RT(argd)
9180   TURN #3,-argd
9190 END DEFine RT
9200 DEFine PROCedure LT(argd)
9210   TURN #3,argd
9220 END DEFine LT
9230 DEFine PROCedure CS
9240   CLS #3
9250   POINT #3,xcenter,ycenter
9260 END DEFine CS
9270 DEFine PROCedure PU
9280   PENUP #3
9290 END DEFine PU
9300 DEFine PROCedure PD
9310   PENDOWN #3
9320 END DEFine PD
9330 DEFine PROCedure SETPC(arg)
9340   INK #3,arg
9350 END DEFine SETPC
9360 DEFine PROCedure SETBG(arg)
9370   PAPER #3,arg
9380 END DEFine SETBG
9390 DEFine PROCedure HOME
9400   POINT #3,xcenter,ycenter
9410 END DEFine HOME
9420 DEFine PROCedure CIRCLEL(ar
     g)
9430   CIRCLE_R #3,0,0,arg
9440 END DEFine CIRCLEL
9450 DEFine PROCedure CIRCLER(ar
     g)
9460   CIRCLE_R #3,0,0,arg
9470 END DEFine CIRCLER
9480 DEFine PROCedure CLEAN
9490   CLS #3
9500 END DEFine CLEAN
9510 DEFine PROCedure SETPOS(arg
     x,argy)
9520   LINE_R #3,0,0 TO argx,arg
       y
9530   RETurn 0
9540 END DEFine SETPOS
9550 DEFine PROCedure DOT(argx,a
     rgy)
9560   argx=argx+xcenter
9570   argy=argy+ycenter
9580   POINT #3,argx,argy
9590 END DEFine DOT
9600 DEFine PROCedure SETX(arg)
9610   LINE_R #3,0,0 TO arg,0
9620 END DEFine SETX
9630 DEFine PROCedure SETY(arg)
9640   LINE_R #3,0,0 TO 0,arg
9650 END DEFine SETY
9660 DEFine PROCedure SETH(arg)
9670   arg=arg+90
9680   IF arg>360 THEN arg=arg-3
       60
9690   TURNTO #3,arg
9700 END DEFine SETH

1989 Feb 01 10:26:04
flp1 sc8901 lis
Sf890201_09[8];; Words_6388;;
SLIX (SincLink Information
Exchange);; Contacts;;
Filename Sc8901 (Sfc88)
(Pages_1];;

SLIX Contacts and Newsletter
Exchanges, Jan. 1989
(Sc8901_46);;..

Sc890131.1953-.2006 SLeeC;; Call
from: Sherman Lee 408-926-9381
(881115.1623)..
Sherman plans on getting
together with us to try to read
and write disks from his TS1000
AERCO system on the QL...

Sx890131_Am892_4;; H(A)TS
newsletter February 1989, 4
pages;; Harrisburg Area Timex
Sinclair Users Group;; David
Bennett 717-774-7531;; 329 Rear
Walton Street;; Lemoyne;;
PA_17043;; USA..
Page. Description..
1. Z88 mentioned on 890107
Computer Chronicles..

1989 CapitolFest ad:..
890505-7..
301-439-0756 (voice)..
301-588-0579 (BBS)..

MacLite ad from Cambridge North
America;; 800-366-0088..

2. QL ACEY-DIGETY game listing
by Lee Gayman..

4. QL MSDOS emulator
description, and technical &
general specification from:..
RMG Enterprises..
1419 1/2 7th Street..
Oregon City;; OR_97045..

Dave:..
It appears we can read most TS
disk formats on our QL. Is HATS
newsletter available on disk?
Can we exchange newsletters on
disk?...

Sc890131_ROrrfeltL;; Letter
from: Bob
Orrfelt 415-369-9136;; 3436 Bay
Road;; Redwood City;;
CA_94063..
"January 29, 1989..

Dear Bill,..

Got a phone call from:..
Nancy Street..
542 Branstetter Lane..
Redding;; CA_96001..

She has a TS2068 and is looking
for everything including
BBS's..
Reports one other TS2068 and a
TS1000 in Redding..
Andy is to send TIMELINEZ..
I sent San Mateo LogOn and Pixel
Print SIG info..
Also Lemke Software and Time
Designs addresses..
---------------------------..

On disk drive formats I have:;..
Western Digital Chip
information many, many pages..
"Floppy- Disk Data Storage" by
Robert Grossblatt 11 pages

(CD)..
Appendix A: The anatomy of an
Aerco Disc..

That is all for now..
Bob D"
Bob:..
Thanks for the info..
Do you have the Western Digital
WD-1770-PH Data sheet? This is
the chip in the Kempston Disk
interface we are using with our
QL. We seem to be able to read
10 sector per track disks with
it (Larken and JLO, we haven't
tried Aerco yet). We suspect we
may be able to read 11 sector
per track disks (Amiga, using
AmigaDos 1.3 with 512 byte
sectors)..
Was your letter done on your
Amstrad word processor? You
might consider bringing some
3in Amstrad disks to the next PUG meeting
and we will try to hook a 3in
drive up to our QL and see if
we can read them..
We will send a SincLink to
Nancy..
Nancy:..
How about a report on the
Redding TS user group for the
newsletter? Hope to hear from
you soon...

Sc890130.1130-.1900_TSwensonV;;
Visit from: Tia
Swenson 703-820-3181 (880912)..
We discussed various SLIX and
ESFC projects and Tia told us
that one of his duties at the
Pentagon was to connect his
department to ARPANET (a close
relative to USENET). Sounds
interesting..
Tia also left us a copy of his
new game "Stellar Wars". This
is not a computer game, but
comes with a 20 page manual, a
Control Sheet, a Ship Data
Sheet, and a counter sheet...

Sx890130_Mn891_10;; SMUG BYTES
Jan. 1989, 10 pages newsletter
exchange;; Sinclair Milwaukee
Users Group;; Bill
Heberlein 414-527-2191;; Vice
President and Editor;; 5052 N.
91st Street;; Milwaukee;;
WI_53225;; USA..
Page. Description..
1. SMUG information and table of
contents..
2. "Bill on QL BASIC" QL "OPEN"
commands..
3. Bill is looking for a program
to keep statistics on dog
racing. Can anyone help?..
Sinclair Magazines:;..
TimeDesigns..
UPDATE!..
c/o UPDATE magazine..
--- 1317 Stratford Ave. ..
--- Panama City;; FL_32404..
Quantum Levels..
c/o Quantum Levels..
--- P.O.Box 64..
--- Jefferson;; NH_03583..
QLUI..
c/o QLUI newsletter..
--- 419 Parkwood Dr. E. ..
--- Orange Park;; FL_32073..
(Are any of these newsletters
available on disk? Can we get a
list of the filenames with:;
size, description and cost?)..

NEW QL PROGRAM for club
elections..
QL/IBM PC from Sharp's..
4. SEKTOR TUTORIAL by Dr. Lloyd
Dreger. (TS2068 Sektor program
by Mowgli Assor)..
8. QL POKES..
9. THE DIGITIZER, TS2068 frame
grabber designed, built and
sold by SMUG;;..
Assembled & tested: $49.95+
$3s&h..
Bare board: $19.95+ $3s&h..
Bill:..
Glad to see you guys have a QL
program available on disk. We
have found out in the last few
days that we can read Larken
and JLO disks on the QL using
direct sector read. We plan on
creating a QL procedure to
easily transfer files back and
forth on disk between QL and
TS2068 (and possibly TS1000)..
Can we exchange TS newsletters
and shareware on disk?..
Hope to hear from you soon...

Sg890129_Mncs;; San Jose Mercury
News Sunday Computing Section:
"Software freedom fighter";
Richard Stallman and GNU...

Sg890128_Cs892ugl;; Computer
Shopper February 1989 page 500
user group listings..
Computer Shopper seems to be
down to three TS User Group
listings..
These listings are a good way to
make TS users aware of sources
of help. Maybe some other user
groups could send in
information for listings..
TS User Group listings(3):;..
313- GUTS/SV..
566- Quantum Leap User Group
(QLUG)..
c/o Gale Henslee 806-359-3219..
4411 West 2nd Avenue..
Amarillo;; TX_79106..
Gale:..
Does QLUG have a newsletter? A
shareware library?..
Can we exchange newsletters and
shareware librarys on disk?..
1023- Dallas Timex/ Sinclair/
Amstrad User Group (ST/S/A
UG)..
c/o David Baulch 214-252-5622..
4424 Geddes Ave. ..
Ft. Worth;; TX_76107..
David:..
Is "Data Expansion" available on
disk? Can we exchange
newsletters and shareware on
disk?...

Sc890128.2152_EMartinezC;; Call
from: Enrique
Martinez 415-841-2372;; 1920
Francisco, Apt. 201;;
Berkeley;; CA_94709..
Enrique found out about us from:
John Ezike..
Enrique has a TS1500 that his
girl friend got with a computer
course she took about 3 years
ago. He would like some
information on how to make the
chess game for it run faster at
"Level 3". It takes about 15min
to make a move..
He is also interested in getting
a printer and a MODEM for it
Enrique:..
For a printer and MODEM, try the

folks marked in Sc890119..
It would help others if you
could keep us informed of your
progress..
We hope to hear from you soon...

Sc890128_TCW_TS_SIG_14 meeting..
Discussion leader: Fred Waters..
Gene Lamborn reported on the San
Quentin inmate computer
education project...

Sc890127_SAndersonD;; 5.25in
800K LKDOS disk with note from:
ATSUG;; Steve
Anderson 404-929-3875;;
Position?;; P.O.Box 701;;
Lithonia;; GA_30058..
"Dear Mr. Miller,..
I have the Larken DOS for the
RAMEX MK, and I dont have a
Larken Disk manual. How much
would you charge me to copy
your manual, and mail it to me?
If you could do this, I would
be much obliged..
Bills Obsession is back up,
under the name Wizards
Workshop..
I would appreciate it if you
would help me spread the word..
A friend of mine told me about
your disk exchange, so I
decided to send you a disk of
most of my shareware files. If
there are any Larken Disk
utilities that are shareware,
please send them on the return
disk..
..
Sincerely,..
..
Steve Anderson..
..
Lk89128a_txt

Name	Blocks
FORMAT.BR	1
Hcode.Cr	2
JBBS.B1	3 4 5 6 7 8 9 10
Move.B1	11
Move .C1	12
64col.B1	13 14
FAYE.Cr	15 16
RONNIE.Cr	17 18
ALICE.Cr	19
CLIVE.Cr	20
SEAGOD.Cr	21 22
COPTER.Cr	23
WFALL.Cr	24 25 26
HORSE.Cr	27 28
HI.Cr	29 30
ENTRPR.Cr	31 32
PRES+G.Cr	33 34
REAGAN.Cr	35
2068.Cr	36
SPOCK.Cr	37 38 39
GYRO.Cr	40 41
CHALL.Cr	42 43
NAVIG.Cr	44
SPACER.Cr	45 46
CATHY.Cr	47 48
AL.Cr	49 50 51
BARBIE.Cr	52 53 54 55
ULISTA.CT	56 57 58 59
ULISTB.CT	60 61 62 63
ULISTC.CT	64 65 66 67
BULLET.B1	68 69 70 71 72
64col.C1	73
TIC.B1	74
TINYBD.B1	75 76
TDIAL.B1	77
header.B1	78
rlepro.B1	79
LLS.B1	80
ATTACK.B1	81 82 83 84
KBORD.B1	85
GRAPH.B1	86 87

QUEST.B1	88 89 90 91
MEDEXP.CT	92 93 94 95
SPCGRL.CR	96 97
DECK3.CR	98 99
INTELL.CT	100 101
CHUNKS.CT	102
SPECT.CT	103
6FIX.B1	104 105
INVERT.B1	106
script.B1	107
BLAKJK.B1	108
GROUP.CT	109
apples.B1	110
Break.B1	111
chekrs.B1	112 113
dbustr.B1	114
drace.B1	115
drips.B1	116
derby.B1	117
drop.B1	118
eggs.B1	119
hiway.B1	120
aship.B1	121
hangan.B1	122
nessie.B1	123
trap.B1	124
spider.B1	125
uboat.B1	126
sky.B1	127
akount.B1	128 129
bankr.B1	130 131
bio.B1	132 133 134 135
NOPARK.CT	136
3rle.B1	137
3rle.C1	138
TANG.B1	139
UFILE2.B1	140 141 142 143 144 145 146
UNIF.B1	147 148 149 150 151 152 153
aaort.B1	154 155
TDB.B1	156 157 158
TDBDOC.CT	159

..

Steve:..
Thanks for the disk(s) and the TS2068 shareware files..
Although we have a TS2068 and borrowed Larken systea (not set up) we prefer to do all file aanipulation on the QL since we can copy QL disks to MSDOS disks and back, all on the QL drives..
It turns out, we can also read LKDOS disks on the QL (we tried for the first tiae today)..
We also seem to be able to read JLD disks on the QL..
Our next project will be to try to write Larken and JLD disks and then we can return your disk with any shareware you choose on it..
A partial list of our TS2068 shareware files is aarked in the attached Sn891p2 '$ 881228.1011/Letter from: Bob Kuster"..
Some of the files appear not to be shareware, but we will try to sort things out and send you an 800K disk with all shareware on it and try not to duplicate any of the files you sent us..
For a Larken disk aanual, we encourage you to contact:..
Larken Electronics..
c/o Larry Kenny_613-835-2680..
    RR#2..
    Navan;; Ontario_K4B-1H9..
    CANADA..
If Larry can't supply it, we can send you a copy of the one we have for $0.25 per page (11 pages = $2.75)..
We would prefer you try Larry

first, and try to find out froa him if a single sector can be read from an LKDOS disk. We are working on a SEARCH prograa for the QL, TS2068, and TS1000 and we need this information..
The object is to be able to search all the information on your disk(s) for anything you wish. Your help will speed the project along..
Hope to hear from you soon...

Sc890125_TSsva_8;; GUTS/SV aeeting;; Attendees:: Bill Miller, Nark Wahl, John Hancock and his son: Ken, Andy Hradesky, Gil Basengill, Bob Orrfelt, & Steve Nichols..
Bill brought SLIX contacts and exchange newsletters::..
Sc8901_35?..
Sx8901_6?..
Sc8812_51..
Sx8812_10..
Mark deaoed his Networking program (still under development)..
John volunteered to help transfer any exchange newsletters on Macintosh disks to the 'file server' BBS..
Gil volunteered to contact John Oliger about reading and writing a STANDARD 9 sector per track disk on the TS2068 JLO disk system..
Bob deaoed his TS1500/ 1000 'Chaos' prograa froa Scientific American 1985..
Reference: 'Chaos; Making a new science' by: Jaaes Gleick..
Application: Fluid flow, weather prediction..
Steve reports his 'File server' BBS is working pretty well although he has a few bugs that need to be corrected..
He also reports he was given a 'California Computer Products' CP/M computer with (2) 8in disk drives (don't drop thea on your foot!)...

Sc890124_EMSoftC;; Catalog from: EMSoft (Sc881114);; Peter Hale_617_889_0830?;; Proprietor?;; P.O.Box 8763;; Boston;; MA_02114-8763;; USA...

Sc890124_RHurdL;; Letter froa: Richard Hurd_acd_tel_nuab?;; POB 231;; Seaside;; OR_97138..
Richard found out about us froa TiaeDesigns88at9 which he just received..
He would like more information about SincLink..
He has a TS2068 with LKDOS and (2) 3in Aadek drives and a Tandon 5.25in 80track (quad density) drive..
Richard enclosed $1 in stamps..
Richard:..
Thanks for the stamps!..
As you can see, we are trying to create a STANDARD TS disk format to make exchanging shareware easier. We suspect it will turn out to be as described on Sn891page1 (attached)..
If you could contact Larry Kenny about reading and writing MSDOS disk with LKDOS, it would help the project along..
A list of files which aay be

available (less the commercial ones) is listed in Sc881228.1011/Letter froa: Bob Kuster (marked in Sn891p2)..
This is supposed to be a shareware EXCHANGE. Do you have a list of files to exchange?..
Hope to hear from you soon...

Sc890121_TCN_TS_SIG_10 meeting..
Discussion leader: Fred Waters..
Topics:: UNIX, workstations, EMACS, Calif. lottery..

Carl Linden reports:..
FIDOcon89..
August 24-27, 1989..
San Jose, CA..
Holiday Inn (downtown)..
American Airlines (official airline)..
Contact:..
Carl Linden:..
FIDOcon89 chairman..
408-248-9701 voice..
408-248-0198 BBS..

From: Antony King:..
Microcomputer Expo! for Lockheed eaployees and their guests..
Saturday, February 4th, 10aa-6pa, Techaart, 5201 Great America Parkway, Santa Clara..
..
From: Dick Delp:..
Dick reports the acadeaic secretary of the Stanford Nath Departaent suggests we send her a letter to foraalize our Stanford status. Dick plans to do this...

Sx890120_Cn891_6;; CRAGIST Jan. 1989, 6 pages newsletter exchange;; Cedar Rapids and Greater Iowa Sinclair Tiaex Users;; Don Laabert_319-364-4330;; Editor;; 3310 Clover Drive S.W.;;Cedar Rapids;; IA_52404..
1. BATTERY BACKUP (for the TS1000) by Donald S. Laabert..
In a seperate note, Don asks 'How do you store drawings to disk if you don't have CAD or Auto-Cad?'. Don also reports he sent a copy of CnB91 to Chuck Marshall for his hoae control systea..
Don:..
Your question about the drawings (especially scheaatics) is a good one. Mark Wahl is looking into if we writing a QL 'Draw' prograa which will allow the user to aanipulate a picture on the screen, but will have a series of 'Draw' coaaands as a file for output to disk..
If he can get this working for the QL, perhaps you can convert it to work for the TS2068..
Is CRAGIST available on disk? Can we exchange newsletters on disk?...

Sc890119.1646-.1653 Call froa: Theron Lutz_318-984-6794;; 215 Elawood Drive;; Lafayette;; LA_70503..
Theron found out about us froa Computer Shopper..
His father has a TS2068 and he is looking for a source of software and a parallel printer interface for it..
Theron also has a PC clone..

Theron:..
Thanks for your interest..
For software you aight try Tia Ward (below), or some of the TS vendors listed in the attached Sn891. The TS vendors are also a good source of TS2068 parallel printer interfaces, especially::..
RMG_503-635-7484..
Zebra_718-296-2385..
Foote_904-462-1086..
AERCO_512-451-5874..
Ed Grey_213-759-7406..
It would help others if you could keep us informed of your progress..
We look forward to hearing from you...

Sc890119_TS_Shareware list from: Timex Sinclair Public Domain Library;; Tia Ward_acd-tel-numb? (Sc881228);; 5142-D Ginkgo Drive S.W.;; Tacoaa;; WA 98439..
Tapes available froa Tia for $4.00each (make checks payable to Tia Ward) till 890224..
After that, contact:..
SNUG (Sinclair Northaaerica User Group)..
c/o Mel Nathanson_813-863-5552..
    7515 Arbordale Drive..
    Port Richey;; FL_34668..
..
TS2068;; 60ain tapes::..
Tape number 2001;; 62 files..
Tape number 2002;; 29 files..
Tape number 2003?;; 14 files..
TS1000::..
Tape number 1001;; 34 files..
Tape number 1002;; 69 files..
Tape number 1003;; 56 files..
Tape number 1004;; 37 files..
Tape number 1005;; 31 files..
Tape number 1006;; 9 files..
Tia:..
Thanks for the list. We would like to add it to the SLIX peraanent database if we could get it on disk or tape so we don't have to type it in...

Sc890118_SharpC;; Catalog from: Sharp's;; Mark Steuber_804-730-9697;; Proprietor?;; Box 326;; Mechanicsville;; VA_23111;; USA..
New::..
$ IBM Eaulator;; $149.95..
$ Truap Card 256K;; $249.95..
$ Turbo Coapiler;; $99.95..
$ BASIC (convert SuperBASIC to "C");; $69.95...

Sx890117_Zn891_20;; ZX-Appeal Jan. 1989, 20 pages..
Rod:..
We can now read and write an MSDOS disk on our QL's..
Is there any chance ZX-Appeal is available in any of the disk foraats listed in Sn891p1?..
Can we exchange newsletters on disk?...

Sx890117_Kn891_4;; KATS KOMPUTER KNEWS Jan. 1989, 4 pages..
Randy:..
We can now read and write an MSDOS disk on our QL's..
Is there any chance KATS KOMPUTER KNEWS is available in any of the disk foraats listed in Sn891p1?..

Can we exchange newsletters on disk?...

Sc890117_MacLite(ta) catalog postcard froa: Caabridge North America (CNA 800-366-0088)..
MacLite ($849) includes::..
Caabridge Z88 portable coaputer..
128K aeaory cartridge..
Serial to serial (RS232) cable..
HC Organiser(ta) prograa for Mac..
File transfer prograas for Z88 and Mac...

Sc890117 Letter (postaarked 26.12.88) froa:..
Oscar Eugenio Macia..
Billinghurst 1565, 2'q..
(1425) Capital Federal, BS. AS.. Argentina..
"Hello Bill!:..
How are you? I'a O.K. I've finished the first English course (In TOUCH 1, 2, & 3). The next year (work?) I'll begin LIFESTYLES (3 books too)..
I've enclosed $12 for ad half page..
ATTENTION: I'a sending a C90 tape with aany deaos for you and the TS owners. Maybe you'll receive it the next week..
I had to use separate envelopes because (of) the aoney ($12). The following are soae deaos (playable and non playable deaos):: Raabo III(pl);; Robocop (pl);; Total Eclipse (pl);; Cybernoid 2 (pl);; Last Ninja 2 (spl);; Street Fighter (pl);; Led? Stora (pl);; Rex (pl);; Thunderblade (pl);; Virus (npl);; Barbarian 2 (npl);; and soae aore- (pl)= playable; (npl)= non playable..
I'a doing the coapatible loader (not too easy!). Maybe you MUST USE a SPECTRUM EMULATOR (ROM or cartridge)..
Don't reply before you receive the tape (only wait one week). Please answer ae after you see the deaos of full gaaes that I've- ?..
Best wishes, Merry Xaas and Happy New Year..
O Eugenio"..
Eugenio:..
Thanks for the ad and the list of TS2068 gaae deaos..
The ad is 8I coluans wide and our standard is 64 coluans for half page, so it aay get a little saall when we reduce it to fit. If it had been on MS(PC)-DOS disk we could have changed the aargins to 64 coluan to fit our standard half page size without retyping it in. Also, we wouldn't have had to type in your note..
Can you read and write an MS(PC)-DOS disk? Perhaps we could exchange info on disk? Perhaps even TS2068 prograas (deaos and shareware)?...

Sx890115 Tn88c_14;; TIMELINEZ Dec. 1988, 14 pages...

Sc890115_TSPUG Meeting;; Attendance_20..
Jack Dohany acted as discussion

leader and brought the video tapes of the 1988 Northwest TS_fest in Oregon and displayed thea on the TV/Monitor in the aeeting rooa..
Jack also reported on the 'Linger board' ($80 kit, $110 asseabled and tested) which allows the attachaent of an IBM style keyboard and 80 coluan aonitor to the TS2068..
Jack says he is about 95% finished with a prograa to convert ASCII files to TS2068 Tokenized BASIC. This would allow us to exchange TS2068 Shareware prograas on MSDOS (standard?) disk as text files..
Walt Johnson and John Hancock deaoed their new Z88's..
Walt contributed a Z88 review froa Radio Electronics 8902 pages 96, 97, 98 to the SLII docuaent library..
John Hancock reports his Z88 works fine as a portable Macintosh and transfering files froa the Z88 to his Macintosh and back is very easy..
Nora Lehfeldt deaoed his new Z88 and 1200pbs 'Pocket MODEN'..
Bill Miller brought SLIX contacts and newsletter exchanges::..
Sc8901_22..
Sx8901_4..
Sc8812_51..
Sx8812_10..
Rex Lundgren deaoed his QL and Serial to Parallel cable of his own design. Rex also provided SLIX and TIMELINEZ with a scheaatic and 'theory of operation' for his design..
Rex also deaoed his new color printer for the QL..
Rex borrowed ESFC QL S13-003907 and power supply S13-004069 for use in his CMOS raa expansion, QL expansion buss, and aicrodrive enhanceaent projects..
George Goodman reports he is looking for a good geneology prograa (that he can aodify to suit his own needs) for his MSDOS coaputer. Can anybody help?..
George Mockridge borrowed SLIX's 'HACKER_891' for inclusion of iteas froa page 3 in the TIMELINEZ newsletter exchange page..
Kevin Leung borrowed ESFC docuaents (Sc881228)::..
'How to use USENET effectively'..
'How to read the network news'...

Sx890114 Pn891_8;; PACC_TALK Jan. 1989, 8 pages;; Pittsburgh Area Coaputer Club;; Ralph J. Vasko_412-379-8762?;; Contact?;; One Virginia Dr.;; Donora;; PA_15033;; USA..
Pn881 Contents::..
1. PACC inforaation (officers and SIG leaders)..
2. Why Join a Coaputer Club? by: Phil Cutrara_412-321-3181;; President..
4. Pittsburgh area BBS_list_139..
Ralph:..
The PACC inforaation, 'Why Join

a Coaputer Club' article, and BBS list are interesting. Are they available on disk?..
Can we exchange newsletters on disk?..

Sc890114_TCW_TS_SIG Meeting..
Dick Delp did not attend, so our Stanford status is still undefined...

Sc890113/Post card froa: Base-net BBS_615_837_8352;; 213 Holly Ave. So.;; Pittsburg;; TN_37380...

Sc890113/Note to: Donald Laabert..
Don:..
As you can see, we got the subscription inforaation for you..
We will try to get the Sync's in today's aail..
Please return thea within 30days to avoid subscription/ deposit deductions (10% per aonth)...

Sc890112_2025/Call froa: Andy Hradesky..
Andy reports TIMELINEZ 8812 should be ready for the TSPUG_8901115 aeeting..
He says the Donald Laabert dues TIMELINEZ subscription inforaation is::..
Paid_date_881201..
Aaount_15..
Last_issue_8908..
Andy hasn't had tiae to open our Sc890104 package to hia yet..
He suggests changing the '_doc' extension to '_lis' for 'iba_README_doc' and 'iba_IBMCOPY_doc' which we couldn't iaport into quill..
Andy also says he has heard ruaors of a hard disk (SCSI?) interface that plugs into the QL cartridge port, but he doesn't have any technical inforaation, source, or price...

Sc890112/Disk_720 sectors froa: Tia Swenson..

1000 Fls_890108_1317 (Files)..
Copy, Delete, Move..
current_device:.. to_device:..
flp2_nodisknaae   A: disknaae
471/720 sectors   471/720 sector
old   new
Cfilenaae_ext bytes filenaae.ext

| --------- | --- | ------------- |
asds_dir		
.	87370	
.	28	asds .bot
.	300	asds160K.def
.	301	asds320K.def
.	301	Aprc315K.def
.	302	Aprc630K.def
.	724	asdsdisk.inf
.	2048	asdsrdae.doc
.	27638	asdscpy .doc
.	55728	asdscpy
Core_War_bas	5339	corewar .bas
corewar_doc	6144	corewar .doc
logo_bas	1639	logo .bas
qllogo_doc	4105	qllogo .doc
README_doc	4096	E188812a.doc

Tia:..
Thanks for the disk. We will publish your letter and the two prograas and docs in Sn892 if that is alright with you..
As you can see, we are trying to

keep our filenaaes MSDOS coapatible so that is not another hassle to go thru..
Thanks for putting your disk in a regular disk aailer, but we have been expireaenting with a regular envelope to see how bad the Post Office bends it up..
We will send you ESFC_Menu; the prograa that holds everything we have been working on for the last year. It should keep you aaused for at least a year..
When it first runs, press the 'n' key for c(n)fg (configure- set up the raa disk and set the tiae)..
Pressing 'h' (for help) is fun..
If you have questions, first 'edit' the first line of the PROCedure, then scroll thru it with the 'up arrow' or 'down arrow' keys..
If you still have questions, don't hesitate to contact us..
Maybe when you coae back here 890123 to 890202, we can find you a 3.5in 720K drive to take back with you..
Tia:..
We just tried deleting and writing soae files to your 40 track diskette on our 80 track drive and got a 'read only' aessage..
We had heard that 80 track drives could not reliably write 40 track diskettes because of different track widths..
We will atteapt to add a 'direct sector write' to ESFC_Menu toaorrow at our regular ESFC workshop aeeting Saturday afternoon..
If we are successful we will send you your diskette back with the sectors directly written. We aay not be able to update the directory (so far we haven't even been able to FIND it). You aay have to do a direct sector read to read it..
Perhaps you could consider bringing your drive back with you, and perhaps we could get together at the 890125 GUTS/SV aeeting at the Cupertino Library..
In the aeantiae, we will enclose a printout of ESFC_Menu in case you want to look it over and perhaps type in the 'asds' procedure..
We could also try to send you the files on aicrodrive cartridge, but that could run into coapatibility probleas too...
    Sc890111/Note to: Pete Fisch (Sc861027);; P.O.Box 2002;; Teape;; AZ_85281..
Pete:..
We are atteapting to design a systea which will link TS coaputers with other coaputers to be used as File_servers..
Froa a contact with Steve Nichols (Sc881203_1634) we suspect we need the XMODEM, YMODEN, and ZMODEN definition files by Ward Christiansen and Chuck Forsberg..
Can you help?..
Uploading thea to the LogOn/SV BBS or sending thea on disk in any of the foraats listed in Sn890lp1 would allow us to add

them to the SLIX database
without retyping them..
Thanks for any help you can
provide...

Sc890111/Note to: Computer
Shopper (Sc880922) User Group
Listings Nos. 313 (GUTS/SV);;
465 (TSPUG);; && ? (TSEBZUG);;
c/o FOG;; User Group listing;;
P.O. Box 3474;; Daly City;;
CA_94015_0474..
Thanks for listing GUTS/SV in
the User Group listings..
Perhaps you could add::...

TIMEX SINCLAIR PENINSULA USERS
GROUP (TSPUG), George
Mockridge, P.O.Box 1312, Daly
City, CA, 94044. Supporting
Timex Sinclair...

Sc890110 Lichtenstein_15check..
Howard
Lichtenstein_acd_tel_numb?;;
2719 Weaberly Dr.;; Belmont;;
CA_94002...

Sx890110_Bn88n7_8 (Sx890109);;
TS Bulletin #7 1988, 8 pages
with 2 page letter and 1 page
catalog sheet of newsletters
and booklets;; from: Bill
Harmer..
Bn88n7 Contents::..
2. ZX81/TS1000 Program Listing-
Decibel Conversion..
3. Programming at the CPU Level-
Machine Language for Fun..
4. Programmable Chips for
Computer Accessories (Hardware
Insight)..
5. the Early Computer
Revolution- Switching from
Punched Cards..
6. the Very Latest in Computers
Quickly Becomes only
Nostalgia..
7. Using Programming in Other
Than Built-In BASIC
(ZX81/TS1000)..
8. More on Computer Breakdown
(Hardware:: ZX81, TS1000,
TS2068)...

TS_Bulletin Publications_6::..
Newsletters_3 (back issues $2
each)::..
TS_Bulletin- for Timex-Sinclair
home computer users with a
focus on ZX81/TS1000, computer
literacy, history of technology
and computing and with some
support of other Sinclair
computers like: TS1500, TS2068,
QL, Z88, MSDOS (Amstrad),
PC8300 and having fun with
computers..
TS Hardware and Software
Developers Newssheet- An
occasional publication of
addresses, and news relevant to
Timex-Sinclair computer
hardware hacking and software
development and TS aftermarket
product vendors and User Group
newsletter activity..
Home Computer Orphan Survival
Newsletter- a newsletter with
much the same mandate as the TS
Bulletin but for those who own
a low cost home computer other
than a Timex-Sinclair,
especially one that is not well
supported by the glossy or
other large magazines..
Booklets_3 ($10 each)::..

Assembly Language Programming
for the ZX81/TS1000 Timex-
Sinclair Home Computers..
The Unofficial Master Guide to
the Larken ZX81/TS1000 (LDOS)
Disk System (for Timex-
Sinclair)..
Famous Computers (to appear)-
History of Computers for the
Hands On Computer
Affectionado..
Bill::..
Good to hear from you again so
soon. We would have published
your 2 page letter, but I don't
want to type it in..
Thanks for Bn88n7. We suspect
that completes our 1988
TS_Bulletin collection..
Glad to hear you have a PC_clone
with 5.25in 360K drive..
Is TS_Bulletin available on 360K
disk..
A TS_Bulletin Index would be a
good place to start..
How about an article on 'How I
Hooked my TS1000 up to a
PC_clone and Exchanged TS1000
Shareware on 360K MSDOS (or
MINIX) Disks'?..
Who gets to call their
newsletter files 'Bn89xx'? It's
a race between TS_Bulletin and
BoSTUG_NL..
Newsletter Filenames already
taken::..
Hn89xx- HACKER..
Sn89xx- SincLink..
Tn89xx- TIMELINE2..
Since the back issues of
SincLink will take a large
envelope, we will enclose an
MSDOS 360K disk with::..
HACKER files (Sx890105)..
Batchfil.Mur 81987 (Sc880919)..
Dosinfo.asc 25055 (Sc881210)..
Tell us how bad the disk gets
bent up in the mail..
These disks are US$0.27...

Sc890109 BoSTUG_NL note to:
Peter Hale..
Peter::..
Seeing BoSTUG mentioned in
TS_Bulletin reminded us that we
hadn't replied to your offer to
exchange newsletters
(Sx880916)..
As we told Bill Harmer, we
intend to answer newsletter
exchanges as soon as possible
after we get them in 1989
instead of having a regular
mailing..
Is BoSTUG_NL available on
disk?..
Can we exchange newsletters on
disk?..
Can we exchange TS_shareware
lists?..
Please accept our appologies for
taking so long to answer..
Hope we hear from you soon...

Sc890109 TS_SIG_SD note to: Tia
Edwards..
Tia::..
As you can see, we just found
out about your group from
TS_Bulletin..
Do you publish a newsletter?..
Can we exchange newsletters? On
disk?..
Can we exchange TS_shareware
lists?..
Hope to hear from you soon...

Sx890109_Bn88n8_8 (Sc881228);;
TS Bulletin #8 1988, 8 pages..
Bn88n8 contents::..
2. ZX81/TS1000 LarKen Disk
Utilities..
3. Famous Microprocessors- the
First Microcomputer CPU's..
4. Famous Computers- the DEC
PDP_11..
5. Pascal on the Timex
Sinclair..
6. What to do with your Home
Computer..
7. Getting a Disk Drive for your
Timex Sinclair..
8. It takes all Sorts
(Alphabetical and Numeric
Sorting)..
Bill::..
It is good to hear from you so
quickly..
We are going to try something a
little different for the SLIX
Newsletter EXchange for 1989..
Instead of mailing out EXchange
SincLinks on a regular basis,
we will try to answer each
newsletter as we receive it,
with our latest information..
Strange you should cover Sorts
in your latest newsletter..
We began work on the QL
PROCedure to Search the SLII
Permanent Data Base on 890107..
The steps we are using are::..
1. Sort directories
chronologically into LIFO (last
in, first out) order..
2. Sort files in each directory
into LIFO order..
3. Create Keyword (words that
are capitalized) Array from
first file with keyword Address
(number of bytes from front of
file)..
4. Sort keywords (this takes
about 1 hour for a 55Kbyte
(7000 word) file (Sc8812_lis)
using a 'Shell' sort in QL
SuperBASIC)..
5. Remove duplicates and create
Keyword_table with 1 record for
each keyword with the following
comma delimited fields::..
Field1- (fixed length, 4 bytes)
-Frequency..
Field2- (variable length)
-Keyword..
Fields3toN- (variable length)
-keyword address(s) in file..
6. Repeat for all files and
directories until entire data
base is done..
When we do a 'search' we enter
the srch procedure by typing
'srch' at the prompt..
We are prompted for
'Keyword?:'..
Typing in a few letters and
pressing 'enter' provides us
with a list of keywords
starting with those letters (in
alphebetical order) with the
cursor positioned on the first
keyword..
If we 'enter' a string which is
not in the keyword table, the
'srch' procedure begins a
linear search thru the data
base and displays the first
occurrence of the string..
The string is added to the key
word table and a search for
additional occurrences is
carried out as a seperate
'background' task..
We can use the up/down,

right/left arrows (or mouse) to
position the cursor on the
desired keyword..
Pressing 'space' shows us the
first record containing the
keyword with a flashing cursor
on the keyword..
Each time we select a keyword, a
bit is 'pushed' onto the
frequency field so that if we
ever want to reduce the size of
the keyword table, we can
delete infrequently used
keywords..
Since this entire procedure is
written in SuperBASIC, it is
easy for the user to modify it
to search for records with
multiple keywords and direct
the output to a file instead
of, or in addition to, the
screen..
How do we do this on a TS1000,
you ask..
We are investigating hooking up
the TS1000 to a PC_clone box
(less than $200 at your
friendly local PC clone dealer-
less disk drive controller and
disk drives- your choice on how
much you want to spend on
these) thru a serial
interface..
For an operating system we use
MINIX (a close relative of
UNIX_V7 I'm told..
Reference::..
Ej860724 8.00 dac cac 'a User
Guide to the UNIX system' 518
pages from: Silicon Valley
Surplus..
Ej841221 6.00 dac cac 'UNIX
command summary for System_V'
50 pages from: Computer
Literacy Bookstore)..
We write all the search and sort
procedures in 'C' (same as we
will have to do on the QL if we
want them to be FAST)..
The MINIX System is more or less
public domain..
We have an early version which
runs on a 512K 8088. It comes
on 7 360K disks (source code)..
We also have 18 megabytes of
MINIX articles from USENET (50
360K disks). These will tell
you more than you ever wanted
to know about operating
systems..
Is there any chance that your
TS1000 and Larken disk drive
can write an ASCII file with
Upper and Lower case to an MFM,
512 byte/ sector, 9 sector/
track disk?..
Maybe we can exchange
newsletters by disk. Keep us
informed of your progress, and
we will try to do the same..
Can we exchange TS_shareware
lists? Do you have a printout
of the directory of any
shareware disks you have for
the TS1000_Larken?..
According to Sx88 (Sn891p6,
attached) we seem to be missing
TS_Bulletin88 7. We have
included Sn889t7 & Sn88bta.
This should bring your Sn88
collection up to date. Could
you please send us
TS_Bulletin88_7 to bring our
TS_Bulletin88 collection up to
date?..
Thanks for the information on:
TS_SIG_SD, San Diego Computer

Column 1:

Society;; Tim Edwards_acd_tel_numb?;; 8155 Jamacha Rd.;; San Diego;; CA_92114...

Sc890107_TCW_TS_SIG Meeting;; Attendance_[2...

Sc890106 Note to: Donald Lambert..
Don:..
No matter what it says in SincLink 8901, as you know, we haven't sent you the Sync's. This 'TIMELINE2 Subscription Verification' is turning out to be a little harder than we thought it would be..
Sorry it is taking so long to get you the Sync's you ordered, but we need the date you paid your TIMELINE2 subscription, the amount, and the last issue you will receive (if you know it)..
As you can tell, we are just beginning this 'Library Loans for Deposit' system, and it may take a while to work the 'bugs' out..
Thanks for being so patient...

Sc890105_1759-.1815/Call from: Richard Matejovic (Sc881217_1818);; 614-263-0447..
Richard reports he fixed his CAI Stringy Floppy interface board by repairing a solder bridge on it..
Now the stringy floppy won't work when the TS2040 printer is plugged into the interface board. Richard suspects he saw an ad for a product to cure this in a back issue of Sync or Syntax. Can anyone else help?..
Richard also says he is about ready to start publishing his newsletter: 'the Columbus (Ohio) TS1000 Survivor'..
He has been writing his own word processor. We suggested he try using THE ORGANIZER (VU-FILE) as a poor man's word processor (from TIMELINE2 8308-9 page 1)...

Sx890105_1748 HACKER_21files;; TSUG/Las Vegas ;; Steve Sawchuk;; Editor..
Steve reports that some of the text was cut off and HN8901P7 was destroyed..
MS(PC)-DOS_5.25in_360K disk:..

1000 Fls 890108_1317 (Files)..
Copy, Delete, Move..
current device:.. to device:..
B: WM89108A   flp1 vol name
306176 bytes free 1100?/1440 sec
OLD   new
CFILENAME.EXT BYTES filename_ext

	9540	Hn891_lis
HN0189P1.TXT	715	Hn891p1_txt
HACK234 .TXT	6795	Hn8912t4_txt
HN0189P5.TXT	2046	Hn891p5_txt
HN0189P6.TXT	1431	Hn891p6_txt
HN0189P8.TXT	1083	Hn891p8_txt
	16450	Hn88c_lis
HN1288P1.TXT	893	Hn88cp1_txt
HN1288P2.TXT	2332	Hn88cp2_txt
HN1288P3.TXT	1332	Hn88cp3_txt
HN1288P4.TXT	2331	Hn88cp4_txt
HN1288P5.TXT	2255	Hn88cp5_txt
HN1288P6.TXT	2657	Hn88cp6_txt

Column 2:

	6583?	Hn88b_lis?
HN1188P1.TXT	137	Hn88bp1_txt
HN1188P2.TXT	2048	Hn88bp2_txt
HN1188P3.TXT	2175	Hn88bp3_txt
HN1188P4.TXT	2223	Hn88bp4_txt
	12994?	Hn88a_lis?
HN1088P1.TXT	842	Hn88ap1_txt
HN1088P2.TXT	2449	Hn88ap2_txt
HN1088P3.TXT	2255	Hn88ap3_txt
HN1088P4.TXT	2482	Hn88ap4_txt
H1088P56.TXT	4966	Hn88a5t6_txt

Steve:..
Thanks for the files. We will try to edit them into 4 files with one 'the HACKER' in each file as shown. Although we have an MS-DOS Machine, the above information (file size) was derived from our 'asds' (MS-DOS) procedure written in SuperBASIC for the QL..
Current MS-DOS Commands supported by 'asds' are:..
A) B: (change default drive to B: (flp2))..
B) DIR (directory of drive B: (flp2))..
B) TYPE FILENAME.EXT (print filename.ext on flp2_ to screen 85 columns wide)..
B) VER (prints to screen DOS version emulated (2.11, 360K; 3.1, 720K)..
B) DOS=2 (convert to DOS_2.11)..
B) DOS=3 (convert to DOS_3.1)..
B) CLS (clear screen)..
B) CHDIR (change directory)..
B) EXIT or QUIT (return to SuperBASIC. Since this whole procedure is written in SuperBASIC, the standard QL 'BREAK' (ctrl space) will also return to SuperBASIC)..
We have used the TYPE command to look at a few of your files..
Our next project will be to 'cpy' (Copy) them from 5.25in 360K DOS disk to 3.5in 720K QL disk. We hope to have the 'cpy' procedure done tomorrow..
When we get the 'cpy' procedure done, we will 'cpy' the SincLink files to 5.25in 360K DOS disk and send them to you. We will also try to send you a disk with 'HACKER' files as they will appear in the SLIX permanent data base so you can check them for accuracy and suitability...

Sc890105_1054-.1125/Call from: Howard Lichtenstein_acd_tel_numb?;; 2719 Wemberly Drive;; Belmont;; CA;; 94002..
Howard found out about us from: Walt Johnson and George Mockridge..
He is looking for a source to purchase a TS2068..
He tried Sunset Electronics and RMG but was told they couldn't deliver one immediately..
We suggested some of the FOR SALE ads in SincLink and: Brooklyn Closeout Corp.;; ACD-TEL-NUMB?;; 167 Clymer St.;; Brooklyn;; NY;; 11211..
We also suggested a QL from: Sharp's_804_730_9697..
Howard has a PC Clone and his wife has a Macintosh. He is interested in FORTH, MODULA 2, and PASCAL...

Column 3:

Sc890104/PC_UNIX_SIG Meeting;;
Speaker: Brian Breakerhoff_415_683_2625,
Subject: Everex low cost UNIX (ENIX) for the 80386::..
(2) users .... $200..
unlimited users .. +$200- $400..
documentation .... +$200..
...

Sc890104/Note to: Andy Hradesky..
Andy:..
We have inclosed (2) double size copies of SincLink 8901 for pasteup into TIMELINE2 8901..
We have also inclosed a complete? SincLink 8901 with a SincLink Subscription List..
Please provide us the cost of publishing and mailing TIMELINE2 to these folks to fulfill their SincLink subscriptions and we will provide a SincLink check to American Micro Connection for this cost..
We have also inclosed Donald Lambert's check (made out to 'American Micro Connection') for the Sync's he borrowed from the SLIX library. Please apply this to the SincLink Subscription Fulfillment Account..
Don suspects he is a TIMELINE2 subscriber. Can you provide a dues amount, dues paid date, and last issue date for him?..
We need this information so that we can verify that he is a subscriber and how much of his subscription remains to cover possible deposit deductions...

Sc890103_1700/Call from: Norman Owens (Sc881227_1400)..
Norm reports he has aquired a Shugart compatible disk drive (40 track; double sided?)..
We recommended a disk interface for his TS1500 instead of a Stringy Floppy..
He said he would contact the following TS vendors about TS1500 disk interfaces and keep us informed of his progress::..
LarKen_613_835_2680..
John Oliger Company;; acd_tel_numb?;; 11601 Whidbey Drive;; Cumberland;; IN;; 46229;; (from: CTM_8805p97)..
AERCO_512_451_5874..
Norm:..
It was good talking to you..
When you contact the TS1500 disk interface vendors, it would be good if you could check with them about the possibility of reading and writing an MS(PC)-DOS disk...

Sc890103_1344/Postcard from: Tom Phillips_904_739_2580;; 2942 Christopher Road;; Jacksonville; FL;; 32217..
Tom reports he has the following items FOR SALE::..

Item	Price S&H..
QL Printer w/3 ribbons	$125 $5..
TS2050 MODEM	$35 $3..
Matheson Keyboard Interface	$35 $3..
66 Key Keytronics Keyboard- wired for TS2068	$30 $3..
TS2040 printer	$25 $3..

Column 4:

9in TTL Monochrome Monitor, needs power supply, no case .... $25 $5..
8K Hunter NVM board .. $30 $3..
2 Tandon Disk Drives- full height, DSDD. need:: align, 1 door latch .... $50 $5..
TS2020 cassette player $25 $3..
Bell Systems Answering Machine .... $30 $3..
More complete information in SLIX files, or contact Tom directly...

Sc890104_0910 Sc8901_END....

Sn891_files::..
filename_ext bytes..

Sn8901_lis	10738..
Sc8812_lis	55422..
Sx88_lis	17708..
Sn88_lis	4888...

CORE WAR documentation By: Timothy Swenson...

In May 1984 issue of Scientific American, A. K. Dewdney in his
Computer Recreations column decribes a game called Core War.
The game is run by a monitor program called MARS (Memory Array
Redcode Simulator). Essentially what the program does is to
control two other programs written in an assembly-like language
called REDCODE. The two programs are designed to try to
destroy each other. They do this by somehow stopping the other
program from running. They can put bad data in the middle of
the program, take over control of the program, etc..

MARS is a computer simulation of a computer. It uses an array
of strings to simulate memory spaces and executes programs that
run in these spaces. The program executes one line of code
from one Redcode program and then another line from the other.
This continues until MARS can not execute a command. The
program that bombs out is the program that loses.
Redcode is comprised of the following commands::..

MOV A B- Move contents of address A to address B..
ADD A B- Add contents of address A to address B and put
  resultsin address B..
SUB A B- Subtract contents of address A from address B and put
  results in address B..
JMP A--- Transfer control (jump) to address A..
JMZ A B- Jump to address A if contents of address B is equal to
  zero..
JMG A B- Jump to address A if contents of address B is greater
  than zero..
DJZ A B- Subtract one from contents of address B and jump to
  address A if contents of address B is equal to zero..
CMP A B- Compare contents of address A and B then skip next
  instruction if unequal..
DAT A--- Non-executabel statement, used for storage of numbers
RET----- Used to end program. Not really part of REDCODE but it
  is used by the program to know the end of your program when
  reading it in from the data statements..

All of the addresses in Redcode are relative. PC is the Program
Counter, this controls what line MARS is executing. MOV 0 1
means to put the contents of address PC+0 (in other words the
current line) and put it in address PC+1 (the next line).
Negative numbers are allowed to mean addresses before the PC..

Redcode does make provisions for direct and indirect addressing.
A # before a number is direct addressing and an ∂ is used for
indirect. MOV #0 1 means to put the number 0 in the address
1+PC. In indirect the commands::..

DAT 20..
MOV 0 ∂-1..

means to put the contents of address 0+PC and store it at the
address pointed to by the number at the previous line).
MARS goes and gets the number stored at PC-1 and finds 20, it
then puts the data at that address, PC+20..

Indirect addressing may be used for both A and B arguements,
direct may be used for A, but direct may only be used for B
with the CMP command. All other commands may not use direct
addressing of B..

I must spend a minute and talk about the DAT command. The
command itself does not execute, but it tells MARS that data is
stored at this address. DAT statements are used similarly to
variables. If you are going to add the contents of two
addresses then they must be DAT statements. If a number is
stored in an address that is not preceded by DAT it is
considered a bug and the program bombs out..

The MOV and DAT commands interact different together. If you
MOV #0 20 and address PC+20 is a DAT statement the 20 is added
so that at PC+20 is stored DAT 0. But if PC+20 is not a data
statement then just 0 is stored at PC+20. This is used to put
"bombs" in programs. If you can drop a 0 in the middle of the
other program then MARS will halt when it gets to that line
causing the other program to crash..

Here are a few example programs::..

IMP- copies itself to the next address and plows through

memory::..

MOV 0 1..
RET..

Dwarf- This puts 0's in every 5th address, laying down a barrage
  of 0's::..

DAT -1..
ADD #5 -1..
MOV #0 ∂-2..
JMP -2..
RET..

Gemini- This program copies itself forward 100 addresses in
  memory and then moves control to the copy::..

DAT -2..
DAT 99..
MOV ∂-2 ∂-1..
CMP -3 #8..
JMP 4..
ADD #1 -5..
ADD #1 -5..
JMP -5..
MOV #-2 93..
MOV #99 93..
JMP 93..
RET..

To run the program, type the two programs you want into the data
  statements in lines 2000 (prog #1) and 3000 (prog #2). Then
  RUN the program. As each line of code is executed it is
  printed out on the screen along with the address at which it is
  at. This way you can the progress of the two programs..

Also included in the program is a procedure called list_memory.
  This procedure copies out the contents of the memory array to
  the screen. This way you can see what is in memory..

There is a constant called top_mem. This defines how big the
  memory array is. If you find memory too small, just increase
  this constant...

```
1989 Feb 02 14:46:34
raal_sys_bt2_tap
100 REMark corewar_890202.1427
  by Tim Swenson...
110 DEFine PROCedure svc: DELETE
  flp1_ss89202b: SAVE flp1_ss89202
  2b_bas: END DEFine
120 top_mem=1000
130 DIM memory$(top_mem,14)
140 prog1=2000
150 prog2=3000
160 pc_prg1 = RND(1 TO 1000)
170 pc_prg2 = RND(1 TO 1000)
180 IF ABS(pc_prg1-pc_prg2)=100
THEN GO TO 160
190 load_prog
200 CLS #2: CLS #0 : CLS
210 PRINT #2," P R O G R A M  #
1"
220 PRINT " P R O G R A M  # 2"
230 REPeat main_loop
240     pc_main = pc_prg1
250     prog=1
260     cad$=memory$(pc_main)
270     PRINT #2,pc_main;" ";cad$
280     sep_line
290     evaluate
300     IF pc_prg1=pc_main THEN
310        pc_prg1=pc_prg1+1
320     ELSE
330        pc_prg1=pc_main
340     END IF
350     pc_main = pc_prg2
360     prog=2
370     cad$=memory$(pc_main)
380     PRINT pc_main;" ";cad$
390     sep_line
400     evaluate
410     IF pc_prg2=pc_main THEN
420        pc_prg2=pc_prg2+1
430     ELSE
440        pc_prg2=pc_main
450     END IF
460     IF pc_prg1>top_mem THEN pc
  _prg1=pc_prg1-top_mem
470     IF pc_prg2>top_mem THEN pc
  _prg2=pc_prg2-top_mem
480 END REPeat main_loop
490 STOP
500 DEFine FuNction get_num(addr
ess)
510     LOCal temp$
520        temp$=memory$(address)
530     IF temp$="" THEN goto_erro
r
540     IF temp$(1 TO 3) <> "DAT"
THEN goto_error
550        RETurn temp$(5 TO)
560 END DEFine get_num
570 DEFine PROCedure sep_line
580 LOCal blank
590     IF LEN(cad$)<5 THEN goto_e
rror
600     arg2 = 0
610     opcode$=cad$(1 TO 3)
620     cad$=cad$(5 TO)
630     opmodea=1 : opmodeb=1
640     IF cad$(1)="#" THEN opmode
a=0
650     IF cad$(1)="∂" THEN opmode
a=2
660     IF opmodea<>1 THEN cad$=ca
d$(2 TO)
670     IF (opcode$="JMP") OR (opc
ode$="DAT") THEN arg1=cad$ : RET
urn
680     blank = " " INSTR cad$
690     arg1 = cad$(1 TO blank-1)
700     cad$=cad$(blank+1 TO)
```

```
710   IF cad$(1)="$" THEN opaode
b=0
720   IF cad$(1)="a" THEN opaode
b=2
730   IF opaodeb<>1 THEN cad$=ca
d$(2 TO)
740   arg2=cad$
750 END DEFine sep_line
760 DEFine PROCedure evaluate
770   IF opaodea=0 THEN a=arg1
780   IF opaodea=1 THEN a=pc_aai
n+arg1
790   IF opaodea=2 THEN a=pc_aai
n+get_nua(pc_aain+arg1)
800   IF opaodeb=0 AND opcode$<>
"CMP" THEN PRINT #0,"Direct aode
 not allowed to second arggueaen
t "; STOP
810   IF opaodeb=0 THEN b=arg2
820   IF opaodeb=1 THEN b=pc_aai
n+arg2
830   IF opaodeb=2 THEN b=pc_aai
n+get_nua(pc_aain+arg2)
840   IF a)top_aea THEN a=a-top_a
ea
850   IF b)top_aea THEN b=b-top_a
ea
860   IF opcode$="MOV" THEN MOV:
RETurn
870   IF opcode$="ADD" THEN ADD:
RETurn
880   IF opcode$="SUB" THEN SUBT:
 RETurn
890   IF opcode$="JMP" THEN JMP:
RETurn
900   IF opcode$="JMZ" THEN JMZ:
RETurn
910   IF opcode$="JMG" THEN JMG:
RETurn
920   IF opcode$="DJZ" THEN DJZ:
RETurn
930   IF opcode$="CMP" THEN CMP:
RETurn
940   IF opcode$="DAT" THEN RETur
n
950   goto_error
960 END DEFine evaluate
970 DEFine PROCedure load_prog
980   LOCal count, prog$
990   RESTORE prog1
1000   count = pc_prg1
1010   REPeat loop
1020     READ prog$
1030     IF prog$="RET" THEN EXI
T loop
1040     IF count>top_aea THEN c
ount=count-top_aea
1050     aeaory$(count)=prog$
1060     count=count+1
1070   END REPeat loop
1080   RESTORE prog2
1090   count = pc_prg2
1100   REPeat loop
1110     READ prog$
1120     IF prog$="RET" THEN EXI
T loop
1130     IF count>top_aea THEN co
unt=count-top_aea
1140     aeaory$(count)=prog$
1150     count=count+1
1160   END REPeat loop
1170 END DEFine load_prog
1180 DEFine PROCedure goto_error
1190   IF prog=1 THEN PRINT #2,"
E R R O R"
1200   IF prog=2 THEN PRINT "E R
R O R"
1210   CLS #0
1220   PRINT #0,"A Winner has bee
n found."
1230   PRINT #0,"Player $";prog;"
 has lost."
1240   STOP
1250 END DEFine goto_error
1260 DEFine PROCedure MOV
1270   IF opaodea=0 THEN
```

```
1280     teap$=aeaory$(b)&"  "
1290     IF teap$(1 TO 3)="DAT"
THEN
1300       aeaory$(b)="DAT "&a
1310     ELSE
1320       aeaory$(b)=a
1330     END IF
1340   ELSE
1350     aeaory$(b)=aeaory$(a)
1360   END IF
1370 END DEFine MOV
1380 DEFine PROCedure ADD
1390   LOCal teap
1400   IF opaodea=0 THEN
1410     teap=get_nua(b)+a
1420   ELSE
1430     teap=get_nua(b)+get_nu
a(a)
1440   END IF
1450   aeaory$(b)="DAT "&teap
1460 END DEFine ADD
1470 DEFine PROCedure SUBT
1480   LOCal teap
1490   IF opaodea=0 THEN
1500     teap=get_nua(b)-a
1510   ELSE
1520     teap=get_nua(b)+get_nu
a(a)
1530   END IF
1540   aeaory$(b)="DAT "&teap
1550 END DEFine SUBT
1560 DEFine PROCedure JMP
1570   pc_aain = a
1580 END DEFine JMP
1590 DEFine PROCedure JMZ
1600   LOCal teap
1610   teap = get_nua(b)
1620   IF teap=0 THEN JMP
1630 END DEFine JMZ
1640 DEFine PROCedure JMG
1650   LOCal teap
1660   teap = get_nua(b)
1670   IF teap>0 THEN JMP
1680 END DEFine JMG
1690 DEFine PROCedure DJZ
1700   LOCal teap
1710   teap = get_nua(b)
1720   teap=teap-1
1730   aeaory$(b)="DAT "&teap
1740   IF teap=0 THEN JMP
1750 END DEFine DJZ
1760 DEFine PROCedure CMP
1770   LOCal teapa,teapb
1780   IF opaodea=0 THEN
1790     teapa=a
1800   ELSE
1810     teapa=get_nua(a)
1820   END IF
1830   IF opaodeb=0 THEN
1840     teapb=b
1850   ELSE
1860     teapb=get_nua(b)
1870   END IF
1880   IF teapa<>teapb THEN pc_a
ain=pc_aain+2
1890 END DEFine CMP
1900 DEFine PROCedure list_aeaor
y
1910   FOR x=1 TO top_aea
1920     PRINT aeaory$(x)
1930   NEXT x
1940 END DEFine list_aeaory
1950 DATA "DAT -2","DAT 99","MOV
a-2 a-1","CMP -3 $8","JMP 4","A
DD #1 -5"
1960 DATA "ADD #1 -5","JMP -5","
MOV a-2 93","MOV a99 93","JMP 93
","RET"
1970 DATA "DAT -1","ADD #5 -1","
MOV #0 a-2","JMP -2","RET"
```

9. TS2068 GAME AD froa:..
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6..
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MEETINGS: EVERY SATURDAY MORNING AT 9:00 A.M.
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            JORDAN HALL (in the quad)
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            BRING EQUIPMENT AND POWER STRIPS.

DATES: FEBRUARY 22, 1989
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            APRIL 26, 1989

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DATES: FEBRUARY 11, 1989
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